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ABSTRACT

This report presents an analysis of public and leadership opinion survey data about engineering and technology over the past 10-15 years. It examines public attitudes toward technology and engineering, and provides implications about views concerning specific issues related to these general subjects. The volume is organized thematically, into sections, which include: (1) the public's perception of engineering; (2) the importance of technology in the United States; (3) the perceived quality of U.S. products versus foreign products; (4) technological development and protectionism; (5) technological investment and business; (6) technology and the federal government; (7) technology, the Strategic Defense Initiative, and space exploration; and (8) public views of technology. Within each section, detailed observations provide further analytic interpretation. Written analyses and interpretations are interspersed with tabular material that generally presents data in chronological order to support the conclusions. (TW)

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PUBLIC ATTITUDES TOWARD ENGINEERING AND TECHNOLOGY

PART 1

An analysis of existing
survey data for
The National Academy of Engineering

1986

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PUBLIC ATTITUDES TOWARD ENGINEERING AND TECHNOLOGY

A Public Agenda Foundation Report
to the
National Academy of Engineering
Office of Public Awareness

February 1986

Mary Komarnicki
John Doble

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EXECUTIVE SUMMARY

I. INTRODUCTION

This report by the Public Agenda Foundation for the National Academy of Engineering's Office of Public Awareness presents an analysis of public and leadership opinion survey data about engineering and technology over the past ten to fifteen years. It is the most comprehensive examination of public attitudes toward technology and engineering, and of the implications of views about specific issues related to those general subjects, that has yet been compiled.

The data in this report comes from three sources: the archives of the Roper Data Center at the University of Connecticut, The National Science Foundation's volumes of Social Indicators, and proprietary data provided to the Public Agenda, for the Academy's use, by AT&T.

The volume itself is organized thematically, into sections. Within each section, "Detailed Observations" provide further analytic interpretation. Written analysis and interpretations are interspersed with tabular material that generally presents data in chronological order to support those conclusions. Though less plentiful than public opinion data, leadership attitudes have been included whenever relevant data was available.

Finally, we should emphasize that while the analysis centers on engineering and technology, the reader should recognize that many questionnaire items ask about "science and technology." Whenever possible, we differentiate between those two concepts and limit our interpretations to those data that are of greatest importance to the Academy, its Office of Public Awareness, and its interest in exploring the possible development of a nonpartisan, public information and education campaign.

II. SUMMARY OF FINDINGS

This report presents thirty-five distinct findings, grouped by subjects, into eight broad thematic areas of interest to the Academy. The summary below merely highlights the key findings from those eight sections.

Section 1: The Public's Perception of Engineers

The engineering profession is well regarded by the American people. The public believes that professional standards are high and that engineers are generally competent and ethical. However, there is some evidence that public esteem for the profession, though still comparatively excellent, has slipped in the past two or three years.

Section 2: Technology and the United States: Its Importance and Where We Stand

The public believes that technology is vital both to the economic prosperity of the United States and in sustaining the influence of this country worldwide. At the same time, people do not spontaneously include technology when asked, for example, to list the most important factors that contribute to American prosperity. While the U.S. is viewed as a world leader in technology, large numbers of Americans feel that other countries are "catching up." Government leaders rank the development of new technology as the nation's most important economic goal, and leaders in the area of science and technology policy say that this country should seek to lead the world of basic research.

Section 3: Perceived Quality of U.S. vs. Foreign Products

The public expresses concern about the quality of American-made products. Many people say, for example, that foreign cars are of better quality than those built in the U.S; and foreign cars are increasingly felt to be better in specific ways: in the quality of workmanship and freedom from repairs and in providing better gas mileage. In fact, large numbers of Americans say they will buy an American-made car because it is built in this country, not because it is of higher quality or of better value. Importantly, however, the public does not believe that the comparatively poor quality of U.S. products is due to poor engineering or inadequate technology; rather the public cites other factors, including deficiencies in the management of American companies, labor costs, and the subsidies provided by foreign governments.

Section 4: Technological Development and Protectionism

Americans generally say that trade with Japan is "harmful" to the U.S. economy. Yet most people tend to reject protectionist measures as a remedy, favoring modernization and increased investment in technological research and engineering as solutions to America's difficulty in competing internationally.

Section 5: Technological Investment and Business

People favor business investment in technological research and development and say this is an appropriate use of business profits. Large numbers of Americans believe that businesses put too high a priority on executive bonuses and "perks," and, as a result, people feel that companies do not invest enough of their profits in essential research and development.

Section 6: Technology and the Federal Government

Americans favor government support for technological R&D and say that past government expenditures in this area have "paid off." In fact, a majority favors increased government support of research, particularly at the college and university level. Government leaders tend to reject any national policy to restrict high technology exports, but large numbers among them say that there should be some restrictions in this area.

Section 7: Technology, SDI, and Space Exploration

Americans generally support the development of the Strategic Defense Initiative (SDI or "Star Wars"), but support is thin, and may reflect confidence in the President and his judgment more than enthusiasm for the idea itself. If this interpretation is correct, public opinion is potentially volatile in this area.

The public's continuing support for the space program, however, is clear, in spite of the recent tragedy with the space shuttle. Most people say the accident was probably caused by an engineering or technological flaw, yet even this did not shake public confidence in science and technology.

Section 8: Public Views of Technology

Part 1: Technology's General Impact

Americans have great faith that technology can solve pressing national problems and they believe that technology has generally improved the quality of life. At the same time, people are aware of at least some

of the risks, and their positive view of technology is not based on what might be called "blind optimism."

Part 2: Technology's Impact on Jobs

In the workplace, people say technology has made many jobs safer and increased productivity; but Americans are uncertain whether technology creates more jobs than it takes away. In spite of their unease, however, people oppose laws that would limit the ability of business to make technological changes in the workplace.

Part 3: Social Control of Technology

About the desirability of controls over technology, public opinion is distinctly mixed. People oppose controls that would restrict the development of useful new technology, yet they are concerned about new threats to public safety.

Part 4: Public Awareness and Potential for Involvement

The public is moderately interested in scientific and technological matters, and feels that their basic understanding of these issues is "adequate." Further, people say that scientific and technological development is an area where they do not have enough information to make informed judgments or decisions.

These tentative conclusions or "findings" are built upon a wealth of detail which is summarized in the pages that follow and supported by data that is excerpted there.

SECTION 1: THE PUBLIC'S PERCEPTION OF ENGINEERS

The engineering profession is well regarded by the American people. The public believes that professional standards are high and that engineers are generally competent and ethical. However, there is some evidence suggesting that public esteem for the profession, though still excellent, has slipped in the past two or three years.

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FINDING #1

A STRONG MAJORITY OF AMERICANS EXPRESS HIGH REGARD FOR ENGINEERS AND THE ENGINEERING PROFESSION. HOWEVER, EVIDENCE SUGGESTS PUBLIC REGARD FOR THE PROFESSION MAY HAVE SLIPPED IN RECENT YEARS.

****

Detailed Observation

Engineering is consistently ranked very high as a recommended career.

TABLE #1-1

Q: "Supposing a young man came to you for advice on choosing a line of work or career. What kind of work or career would you recommend?"

	May 1985
	%
Computers	39
Medicine	17
Business	13
Engineering	12
Skilled work (crafts)	12
Electronics	11
Law	9
Military	6
Teaching	5
Accounting	5
Sales	3
Auto mechanics	2
Politics	2
All others	20
No opinion	30

NOTE: Adds to more than 100% due to multiple responses. First and second choices were combined.

Source: Gallup, May 1985, national, n = 1528.

TABLE #1-2

Q: "I am going to read off a number of different occupations. For each would you tell me whether you feel it is an occupation of very great prestige, considerable prestige, some prestige or hardly any prestige at all?"

	Oct. 1977				
	Very Great	Considerable	Some	Hardly Any	Not Sure
	%	%	%	%	%
Scientist	66	25	6	1	2
Doctor	61	29	7	1	2
Minister	41	32	21	5	1
Lawyer	36	37	20	5	2
Engineer	34	43	21	2	--
Teacher	29	36	27	6	2
Athlete	26	32	32	8	2
Artist	21	37	32	9	1
Businessman	18	42	34	4	2
Entertainer	18	32	38	10	2
Politician	17	25	34	22	2
Journalist	17	43	33	5	2
Banker	17	39	34	8	2
Skilled Worker	15	35	35	13	2
Salesman	6	19	43	31	1

Source: Harris, Oct. 1977, national, n = 1520.

TABLE #1-3

Q: "Suppose you were in your early twenties and starting out on a career. Which of these occupations would you most like to go into?

	March 1983 %
Computer programmer	22
Nurse	14
Teacher	11
Electronics engineer	9
Doctor	8
Social worker	8
Carpenter	7
Lawyer	7
Forest ranger	6
Musician	5
Airline pilot	4
Corporation executive	4
Long distance truck driver	3
TV (television reporter)	3
Policeman	3
Production line worker (riveter, assembler, drill press operator, etc.)	1
None of them	8
Don't know	3

NOTE: Adds to more than 100% due to multiple responses.

Source: Roper Organization, March 1983, national, n = 2000.

Detailed Observation

While no differences were found among people of different age, sex, educational level, region or income, there is evidence that the profession's status may have dropped slightly in recent years.

TABLE #1-4

Q: "I am now going to read you a list of jobs and professions, for each one I mention, please choose the statement that best gives your own personal opinion of the prestige or general standing that such a job has..."

...Engineer"

	Sept. 1976 %	July/Aug. 1974 %	May 1972 %
Excellent	30	42	40
Good	47	44	43
Average	16	11	13
Below Average	1	1	3
Poor	*	*	*
No Opinion	6	2	3

* = Less than .05%

Source: Opinion Research Corporation for the National Science Foundation. national, (Sept.. 1976: n = 2108); (July/Aug. 1974: n = 2074); (May 1972: n = 2209).

TABLE #1-5

Q: "Suppose a young man came to you and asked your opinion about taking up a profession. Assuming that he was qualified to enter any of these professions, which one of them would you first recommend to him?"

Oct. 1973

Total Sample	%	Those Under 30 Years	%
Doctor	28	Doctor	25
Lawyer	14	Lawyer	20
Engineer-builder	13	Engineer-builder	14
Professor-teacher	10	Professor-teacher	14
Business executive	10	Business executive	9
Dentist	7	Dentist	6
Clergyman	7	Government career	6
Government career	5	Banker	2
Banker	2	Clergyman	1
Other, none, don't know	4	Other, none, don't know	3

Source: Gallup, Oct. 1973, national, n = 1576. (Sample size for the Under 30 Group is unknown.)

Detailed Observation

As for honesty and ethical standards, most people consistently rank engineers as "high" or "average." One study found only clergymen and doctors to have higher ratings.

TABLE #1-6

Q: "How would you rate the honesty and ethical standards of people in these different fields--very high, high, average, low, or very low?"

"...Engineers"

	July 1985	May 1983	July 1981	July 1977	June 1976
	%	%	%	%	%
Very high	11	7	9	8	10
High	42	38	39	41	40
Average	37	39	35	46	45
Low	3	2	4	4	3
Very low	*	1	1	2	1
No opinion	7	13	12	*	*

NOTE: * = less than .5 percent

Source: Gallup, national, (July 1985: n = 1536); (May 1983: n = 1534); (July 1981: n = 1564); (July 1977: n = 1516); (June 1976: n = 1524).

TABLE #1-7

Q: "How would you rate the honesty and ethical standards of people in these different fields -- very high, high, average, low or very low?"

	Aug. 1977			
	Very High/ High	Average	Very Low/ Low	No Opinion
	%	%	%	%
Clergymen	62	30	6	2
Medical doctors	51	38	10	1
Engineers	46	43	5	6
College teachers	43	43	8	6
Bankers	39	50	9	2
Policemen	37	50	12	1
Journalists	34	48	15	3
Lawyers	26	43	27	4
Undertakers	26	51	17	6
Senators	19	52	26	3
Business executives	19	60	18	3
Building contractors	18	53	26	3
Congressmen	16	47	35	2
Realtors	14	51	31	4
Insurance salesman	15	55	27	3
Local officeholders	14	47	36	3
Labor union leaders	13	36	47	4
State office-holders	12	44	41	3
Advertising practitioners	10	44	43	3
Car salesmen	8	40	48	4

Source: Gallup, Aug. 1977, national, n = 1500.

Detailed Observation

On technical and scientific issues of great importance, the public ranks scientists and engineers specializing in the subject as the most qualified to decide the issue. Yet people do not place blind faith in experts, but rather express what might be seen as a healthy skepticism about what experts say.

TABLE #1-8

Q: "Let's suppose that an electric utility company wants to build a nuclear power plant in a particular town or country, but a group of local citizens who live there are afraid it might be dangerous and organize to stop its construction. In a case of conflict like this, which one of the groups listed on this card do you think would be best qualified to decide the issue?"

	Oct. 1979
	Best Qualified*
	%
A group of scientists and engineers who specialize in this area	67
The citizens of the community voting in a referendum	44
A Federal regulatory agency or commission	32
The utility company that will operate the plant	20
Local government officials	15
The governor and the state legislature	9
The courts	7
The President and Congress	5
Don't know	8

* Percentages do not add up to 100% because first and second choice percentages were combined.

Source: Institute for Survey Research, Temple University, for the National Science Foundation, Oct. 1979, national, n = 1635.

TABLE #1-9

Q: "Let's suppose that one group of scientists wants to send radio messages into deep space to try to communicate with other civilizations, but another group of scientists believe that this could lead to conquest of our civilization by more advanced groups that might receive the signal. In a case of conflict like this, which of the groups listed on this card do you think would be best qualified to decide the issue?"

	Oct 1979 Best Qualified* %
A group of scientists and engineers who specialize in this area	70
Administrators of the National Aeronautics and Space Administration	66
The President and Congress	16
The citizens of the country voting in a referendum	15
The United Nations	15
The governor and the state legislature	3
Local government officials	3
The courts	3
Don't know	10

* Percentages do not add up to 100% because first and second choice percentages were combined.

Source: Institute for Survey Research, Temple University for the National Science Foundation, Oct. 1979, n = 1635.

TABLE #1-10

Q: "Do you agree or disagree with the following statement: 'You can't trust what the experts like scientists and technical people say because often what they say isn't right.'"

	April/May 1979 %
Agree	42
Disagree	48
Not Sure	10

Source: NBC News/Associated Press, April/May 1979, national, n = 1600.

SECTION 2: THE U.S. AND TECHNOLOGY: ITS IMPORTANCE AND WHERE WE STAND

The public believes that technology is vital both to the economic prosperity of the United States and in sustaining the influence of this country worldwide. At the same time, people do not spontaneously include technology when asked, for example, to list the most important factors that contribute to American prosperity. While the U.S. is viewed as a world leader in technology, large numbers of Americans feel that other countries are "catching up." Government leaders rank the development of new technology as the nation's most important economic goal, and leaders in the area of science and technology policy say that this country should seek to lead the world in basic research.

****

FINDING #2

MOST AMERICANS CONSIDER TECHNOLOGY TO BE VITAL TO OUR PROSPERITY AND INFLUENCE IN THE WORLD.

****

Detailed Observation

The public consistently ranks "scientific research" and "industrial know-how" as major factors that continue to make America great. Although "technological genius" ranks lower on the list, a solid majority says it is vital too.

TABLE #2-1

Q: Now I'm going to read you some things some people believe have made America great. Looking ahead to the next 25 years, for each item I read, tell me if you think it will be a major factor in continuing to make America great, a minor factor, or hardly a factor at all?*

	1979	1977	1975	1973
	%	%	%	%
Scientific research	89	91	NA	NA
Industrial know-how	80	80	86(1)	87(1)
Rich natural resources	79	77	79	65
Democracy as its political system	74	72	NA	NA
Skill at organizing production	74	71	NA	NA
Technological genius	73	78	NA	NA
Free, unlimited education for all qualified	67	75	75	78
Deep religious beliefs	57	61	NA	NA
People of different racial and religious backgrounds	NA	NA	58	57

* The wording in 1973 and 1975 was "Looking ahead to the next 10 years."

(1) The wording in 1973 and 1975 was "Industrial know-how and scientific progress."

Source: Harris, national, (1979: n = 1514); (1977: n = 1498); (1975: n = 1519); (1973: n = 1513).

Detailed Observation

Additionally, the public sees scientific research and technological development as necessary to maintain economic prosperity and increase U.S. productivity.

TABLE #2-2

Q: "Do you agree that scientific research and technological development (read list) or don't you agree?"

	Nov. 1977		
	Agree	Don't Agree	Not Sure
	%	%	%
"...Are necessary to keep the country prosperous."	92	4	4
"...Are the main factors in increasing productivity."	69	16	15

Source: Harris, Nov. 1977, national, n = 1520.

Detailed Observation

Finally, "technological know-how" ranks first in factors that contribute most to U.S. influence in the world.

TABLE #2-3

Q: "People give different reasons to explain the degree of influence the United States has in the world. Of the things listed on this card, which two do you think contribute the most to U.S. influence in the world?"

(Percentages of first and second responses are combined)

	Oct. 1979 %
1. Our technological know-how	45
2. Our form of government	41
3. Our economic system	26
4. Our scientific creativity	22
5. Our natural resources	19
6. Our religious heritage	15
7. Our educational system	14
8. The racial and ethnic mixture of our population	10

Source: Institute for Survey Research, Temple University for the National Science Foundation, Oct. 1979, national, n = 1635.

Detailed Observation

A large majority says it is very important that America be a leader in "scientific growth and development". In part, this perception rests on the view that the world depends on U.S. industrial know-how, technology, and scientific research.

TABLE #2-4

Q: "How important do you think it is that the United States be a leader in scientific growth and development--very important, fairly important, not too important, or not at all important?"

	May 1979
	%
Very important	74
Fairly important	19
Not too important	4
Not at all important	1
Don't know	3

Source: Roper Organization, March 1979, national, n = 2004.

TABLE #2-5

Q: "Does the rest of the world depend on the United States a lot, a little, or not at all for..."

	Nov./Dec. 1978		
	A Lot	A Little	Not At All
	%	%	%
"...Developing industrial know-how."	74	19	2
"...Technology."	67	24	3
"...Scientific research."	65	27	3

Source: ABC News/Harris, Nov./Dec. 1978, national, n = 1195.

Detailed Observation

However, policy leaders in science and technology are more likely to say that America should lead the world in basic scientific research rather than applied science and technology.

TABLE #2-6

Q: "As a matter of national policy, do you think the United States should seek to be the leader in almost all areas of basic scientific research (applied science and technology), or should we focus our efforts on only selected areas of basic research (applied science and technology)?"

"The U.S. should be a leader in all areas of.."

	Nov./Dec. 1981 %
"...Basic Scientific Research."	50
"...Applied Science and Technology."	38

Source: Public Opinion Laboratory at Northern Illinois University, Nov./Dec., 1981. Nongovernmental policy leaders in science and technology (scientists, engineers, doctors, science journalists and other professional leaders in science related areas from universities, nonprofit institutions and industry), national, n = 287.

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FINDING #3

AT THE SAME TIME, MOST AMERICANS DO NOT SPONTANEOUSLY THINK OF TECHNOLOGY OR TECHNOLOGICAL KNOW-HOW AS ESSENTIAL FOR ECONOMIC PROSPERITY AND GROWTH. RATHER, IT APPEARS THEY NEED TO BE REMINDED OF TECHNOLOGY'S RELATIONSHIP TO GROWTH.

****

Detailed Observation

When asked in an open-ended question (without being given a list of factors), Americans most often cited "political change/new leaders" and "the development of new industry" as the most important factors encouraging economic growth. "Modern technology" received only a middle ranking. Yet when given a list of possible factors, "the current state of American technology, know-how and innovation" was ranked first.

TABLE #3-1

Q: "What is encouraging the economy to grow?"
(People answered in their own words).

	Sept./Oct. 1979*
	%
Political change, new leaders	14
Development of new industry	10
President taking control/president has power to control inflation	7
Individual ambition to get ahead	7
Modern technology	3
High wages	3
Using alternative energy sources	3
People helping the economy grow - all other reasons mentioned	14
Government helping the economy grow - all other reasons mentioned	10
Business helping the economy grow - all other reasons mentioned	10
Don't know	62

*Note: This question was asked to only those respondents who stated that there are factors that encourage the economy to grow (29% of total sample, n = 580). Table percentages are for this subsample only.

Source: Roger Seasonwein Associates for Union Carbide, Sept../Oct. 1979, national, n = 2000.

TABLE #3-2

Q: "I am going to read down a list of items. As I do, I want you to tell me whether each one is helping the nation's economy grow, or holding back the nation's economic growth, or is having very little effect on the nation's economic growth. Is it your feeling that these items are helping this nation's economy grow or holding growth back, or not having much of an effect on the growth of the nation's economy?"

	Sept./Oct. 1979	
	Helps economic growth	Holds down growth
	%	%
The current state of American technology, know-how and innovation	63	13
Major corporations	43	33
The current level of productivity	34	37
Labor unions	28	49
The amount of taxes the average business pays	27	41
Environmental protection laws and regulations	25	41
The amount of taxes the average person pays	24	51
Government spending	20	62
Materials and products imported from foreign nations	18	63
Governmental regulation (other than evironmental laws)	14	51
The size of the federal government	12	54
The energy situation	8	81
Inflation	5	86

Source: Roger Seasonwein Associates for Union Carbide, Sept./Oct., 1979, national, n = 2000.

****

FINDING #4

THE PUBLIC FEELS THAT THE U.S. HAS THE LEAD ON OTHER COUNTRIES IN BASIC SCIENTIFIC RESEARCH AND APPLIED SCIENCE AND TECHNOLOGY. BUT MANY PEOPLE CONTINUE TO FEEL THAT OTHER COUNTRIES ARE "CATCHING UP."

****

Detailed Observation

People increasingly say that America is ahead of other countries in the development of high technology, a trend suggesting that many may feel overall U.S. competitiveness has rebounded and American companies are now better positioned to compete effectively in international markets. However, other data suggest that large numbers of Americans continue to feel that other countries are "catching up" to the U.S. in the development of high technology.

TABLE #4-1

Q: "Do you think that America is ahead of other countries in developing high technology, computers and information systems?"

	Spring 1985 %	Spring 1984 %	Fall 1983 %	Spring 1983 %
Yes	65	56	58	55
No	27	40	37	37
Don't know	9	4	5	8

Source: Public Policy Analysis for the Los Angeles Times (The New York Stock Exchange and UCLA Graduate School of Management), Jan. 1985, national, n = 1014. (Sample sizes for the other years were not available).

TABLE #4-2

Q: "In the area of research and development and high technology, which of the following statements best describes how the United States compares with nations such as Japan and Germany?

	Jan./Feb. 1985	Jan./Feb. 1984
	%	%
The U.S. has the lead, and this lead is expanding	14	7
The U.S. has the lead now, but others are catching up	41	41
The U.S. and others are at the same level	16	19
The U.S. is behind others but is catching up	18	17
The U.S. is behind others and is falling further behind	7	11
Don't know	5	5

Source: Cambridge Reports, Inc., Jan./Feb. 1985, national, n = 1430. The Jan./Feb. 1984 survey also was national and approximated the 1985 sample size.

TABLE #4-3

Q: "Some observers say that the United States is losing its lead in science and technology to Japan and Germany. Do you think this is true or not true?"

	May 1981
	%
U.S. is losing lead	48
U.S. is not losing lead	38
No opinion	14

Source: The Gallup Organization for the Charles F. Kettering Foundation, the National Association of Elementary School Principles and the National Association of Secondary School Principals, May 1981, national, n = 1519.

TABLE #4-4

Q: "Do you feel that U.S. technology and know-how today is better than, equal to, or not as good as the technology of..."

	1981			
	Better than	Equal to	Not as good as	Don't know
	%	%	%	%
"...France."	70	16	4	10
"...West Germany."	45	34	12	9
"...The Soviet Union."	45	32	17	6
"...Japan."	37	37	22	4

Source: Harris, May 1981, national, n = 1250.

****

FINDING #5

GOVERNMENT OFFICIALS NOW RANK THE DEVELOPMENT OF NEW TECHNOLOGY AS OUR MOST IMPORTANT ECONOMIC GOAL.

****

Detailed Observation

Government officials now feel that the development of new technology is the most important economic goal for the nation.

TABLE #5-1

Q: "Here is a list of some economic goals for the nation. Please tell me which you feel are the most important for us to pursue as the current time."

	Government Officials		
	1985 (Rank)	1984 (Rank)	1983 (Rank)
Developing new technology	1	4	6
Keeping down interest rates	2	1	2
Increasing international competitiveness	3	5	7
Creating new jobs	4	2	3
Increasing productivity	5	3	4

Source: Corporate Priorities Environmental Scan, Yankelovich, Skelly & White, Inc. for AT&T, 1985. Government officials: national, n = 118.

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FINDING #6

FOUR IN TEN SAY THE QUALITY OF U.S. EDUCATION CONTINUES TO HARM EFFORTS TO BE A WORLD TECHNOLOGICAL LEADER. ADDITIONALLY, LARGE NUMBERS CITE INSUFFICIENT INVESTMENT IN RESEARCH AND DEVELOPMENT AS A REASON FOR LOW PRODUCTIVITY. ASKED WHAT AFFECTS (OR AFFECTED) AMERICA'S TECHNOLOGICAL CAPABILITY, A MAJORITY NAMED A NUMBER OF EVENTS, INCLUDING PROBLEMS IN THE AUTO INDUSTRY, BUT NOT INCLUDING THE TRAINING OF U.S. ENGINEERS.

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Detailed Observation

Many Americans feel that the current quality of American education continues to harm U.S. efforts to be a world technological leader. And, as recently as 1983, a majority also said that insufficient funding for research and development of new products and technology was partly responsible for America's low productivity.

TABLE #6-1

Q: "Is the current quality of American education helping or harming the efforts of the United States to maintain itself as a world technological leader?"

	Jan./Feb. 1985
	%
Helping	38
(Both)	12
Harming	40
(Don't know)	10

Source: Cambridge Reports, Inc., Jan./Feb. 1985, national, n = 1430.

TABLE #6-2

Q: "It has been said that the U.S. lags behind some other countries such as West Germany and Japan on productivity--that is, the number of units of products that are produced per employee. Here's a list of reasons that have been given for lower productivity by American industry. (Card shown.) Would you read down that list and for each, tell me whether you think it is a major reason, a minor reason or a not a reason for lower productivity in the U.S.?..."

"...Not enough money is spent on scientific research and development of new products and technology."

	April 1983		April/May 1981		April/May 1980	
	%	%	%	%	%	%
Major reason	20		19		19	
		> 52		> 47		> 47
Minor reason	32		28		28	
Not a reason	40		41		37	
Don't know	7		13		16	

Source: Roper Organization, national, (April 1983: n = 2000;) (April/May 1981: n = 1999); (April/May 1980: n = 2009).

Detailed Observation

In terms of what affected America's technological capability, a majority named a number of events as causing our reputation to decline. The drop in American productivity, the problems of the auto industry in competing with Japan, and the defeat in Vietnam lead the list. However, Japan was not felt to be doing a better job at training engineers and scientists.

TABLE #6-3

Q: "In recent years, a number of things have happened to the U.S. which have raised some doubts about our know-how and technological superiority. For each one of these things I'm going to read you, would you tell me whether you think it was a major setback for our reputation for technological capability, a minor setback, or hardly a set back?"

	May 1981			
	Major Setback	Minor Setback	Hardly A Setback	Not Sure
	%	%	%	%
The steady decline in productivity in this country	64	24	8	4
The problems that the U.S. auto industry is having competing with the Japanese	64	24	9	3
The U.S. defeat in Vietnam	62	21	12	5
Japanese success in making high quality cameras, radios, and TV sets, cars and other products	53	29	15	3
The failure of some of our helicopters in the mission to free hostages in Iran	52	29	16	3
The lack of progress by American industry to modernize its plants with high technology	52	30	13	5
The accident at the nuclear power power plant at Three Mile Island	46	34	16	4
The decline of safety in many U.S.-made products	44	35	17	4

Source: Harris, May 1981, national, n = 1250.

TABLE #6-4

Q: "Thinking specifically about the economy now, how would you rate the job Japan is doing (in the following areas) compared to the United States? (Would you say Japan is doing a better job than the U.S. a worse job, or about the same?)"

	March 1982			
	Japan is doing a better job	Japan is doing a worse job	About the same	Not sure
	%	%	%	%
Utilizing a high concentration of technology in their industries	55	6	32	7
Training engineers and scientists	37	12	42	9

Source: Harris for Asaiti Shimbun, March 1982, national, n = 1599.

SECTION 3: PERCEIVED QUALITY OF U.S. VS. FOREIGN PRODUCTS

The public express concern about the quality of American-made products. Many people say, for example, that foreign cars are of better quality than those built in the U.S; and foreign cars are increasingly felt to be better in specific ways: in the quality of workmanship and freedom from repairs and in providing better gas mileage. In fact, large numbers of Americans say they will buy an American-made car because it is built in this country, not because it is of higher quality or of better value. Importantly, however, the public does not believe that the comparatively poor quality of U.S. products is due to poor engineering or inadequate technology; rather the public cites other factors, including deficiencies in the management of American companies, labor costs, and subsidies of foreign governments.

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FINDING #7

THE PUBLIC IS DIVIDED ABOUT WHETHER AMERICAN-MADE PRODUCTS (ESPECIALLY AUTOMOBILES), ARE OF BETTER QUALITY THAN THOSE MADE OVERSEAS.

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Detailed Observation

Only one in four strongly believes that American-made products are of generally higher quality than those manufactured elsewhere. People are divided about the quality of American and foreign cars, especially those made in Japan and Germany. Among the young and those in higher income brackets, majorities say the quality of foreign cars is superior.

TABLE #7-1

Q: "For each of the statements which I will read to you, please tell me whether you strongly agree, mostly agree, mostly disagree, or strongly disagree."

	Strongly Agree %
"...Products produced by American companies, at home or abroad, are better quality"	25

Source: Corporate Priorities Environmental Scan, Yankelovich, Skelly & White, Inc. for AT&T, 1985, national, n = 2424 (16 years or older, including 99 college students living on campus).

TABLE #7-2

Q: "Do you think Japanese cars are better overall than American cars or not?"

	May 1985
	%
Yes, better	35
No, not better	50
Don't know/No answer	15

Source: Associated Press/Media General, May 1985, national, n = 1402.

TABLE #7-3

Q: "Let's talk about Japanese automobiles, specifically. Do you think they are usually better quality than those made here, or about the same, or not as good quality as those made here"?

	May 1983
	%
Better	35
Same	27
Not as good	26
Not sure/Refused	12

Source: Los Angeles Times, May 1983, national, n = 1395.

TABLE #7-4

Q: "I am going to read a list of products and industries. For each, tell me if you feel it is one for which American brands are clearly better or it is one for which overseas brands are as good or better..."

"...Automobiles"

	May 1983
	%
American best	48
Overseas as good or better	45
Don't know	7

Source: Gallup for Newsweek, May 1983, national, n = 915.

TABLE #7-5

Q: "Do you think foreign cars are or are not better made than cars manufactured by U.S. companies?"

	Jan. 1981			
	Foreign cars are better	U.S. cars are better	No difference	No opinion
	%	%	%	%
Total Sample:	34	36	19	11
Age:				
18-34:	40	30	23	7
35-49:	38	35	21	6
50+:	24	43	14	19
Income:				
Under $15K:	23	41	18	18
$15K-$25K:	35	36	20	9
Over $25K:	46	31	18	5

Note: No significant differences were found by sex or region.

Source: Audits and Surveys for the Merit Report, Jan. 1981, national, n = 1200.

Detailed Observation

Americans have long felt that foreign cars were superior in terms of economy and gas mileage. However, increasing numbers now feel that foreign cars are better in a number of respects related to how they are engineered -- their overall workmanship, riding comfort, and freedom from repairs.

TABLE #7-6

Q: "We would like to get your general impression of foreign cars versus American cars of more or less comparable size. I'll read off some qualities or characteristics of cars, and for each ask how you think foreign cars compare with American cars..."

	June '84 %	June '83 %	June '82 %	June '81 %	June '80 %	June '79 %	June '78 %	June '77 %	June '76 %	June '75 %
Gas Economy/Good Mileage										
Foreign cars are:										
A lot/A little better	74	76	71	72	73	70	61	68	60	66
Riding Comfort										
Foreign cars are:										
A lot/A little better	23	20	14	16	13	14	10	10	10	10
Quality of Workmanship										
Foreign cars are:										
A lot/A little better	55	58	51	46	44	41	35	30	31	32
Freedom from Repairs										
Foreign cars are:										
A lot/A little better	33	36	28	26	24	24	17	18	17	18
Enjoyable to drive/ Ease of Handling										
Foreign cars are:										
A lot/A little better	36	34	27	28	28	26	21	20	19	20

Source: Roper Organization, national, (1975: n = 2004); (1976: n = 2004); (1977: n = 2001); (1978: n = 2002); (1979: n = 2006); (1980: n = 2006); (1981: n = 2003); (1982: n = 2000); (1983: n = 2000); (1984: n = 2000).

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FINDING #8

AMERICANS ARE ALSO DIVIDED IN THEIR PERCEPTIONS ABOUT THE QUALITY OF AMERICAN TELEVISION SETS COMPARED TO FOREIGN MAKES.

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Detailed Observation

While Americans are divided about whether foreign cars are higher quality than those built in the U.S., they are also divided about the quality of American televisions compared to overseas brands.

TABLE #8-1

Q: "I am going to read a list of products and industries. For each, tell me if you feel it is one for which American brands are clearly better or it is one for which overseas brands are as good or better..."

"...Televisions."

	May 1983 %
American best	50
Overseas as good or better	39
Don't know	11

Source: Gallup for Newsweek, May 1983, national, n = 915.

****

FINDING #9

IN ASSESSING THE QUALITY OF VARIOUS PRODUCTS, FACTORS OTHER THAN TECHNOLOGICAL SUPERIORITY SEEM TO ACCOUNT FOR AMERICAN'S VIEWS. IN FACT, MOST PEOPLE DO NOT FEEL THAT IMPORTED BRANDS ARE BETTER DESIGNED OR ENGINEERED. RATHER, THE QUALITY OF JAPANESE AND OTHER FOREIGN-MADE PRODUCTS IS SEEN TO BE THE RESULT OF MANAGEMENT PRACTICES, LOWER LABOR COSTS, PRICE, AND GOVERNMENT SUBSIDIES.

****

Detailed Observation

While most people say new technologies improve the quality of consumer products, they do not think better design or engineering is the main reason for the high quality and overall success of imported brands in U.S. markets.

TABLE #9-1

Q: "Some people say the introduction of new technologies makes consumer products better. Other people say the introduction of new technologies usually causes the sacrifice of some product quality. Which of these views is closer to your own?

	Jan./Feb. 1985 %
Improves quality	58
Lowers quality	13
Both	24
Don't know	6

Source: Cambridge Reports, Inc., Jan./Feb. 1985, national, n = 1430.

TABLE #9-2

Q: "In many product areas, imported brands are selling better relative to American brands than they did, say, ten years ago. I am going to read some possible reasons for this. For each, tell me if this is an important reason for the success of imported brands..."

"...Imported brands are better designed and better engineered

	May 1983
	%
Yes, important	39
No	54
Don't know	7

Source: Gallup for Newsweek, May 1983, national, n = 915.

Detailed Observation

In fact, a majority of the public feels that the Japanese, though good at developing their own products and technologies, do not have better technology than the U.S. Most people attribute Japan's success in U.S. markets to a belief that Japanese companies are better managed and benefit from lower labor costs, prices, and government subsidies.

TABLE #9-3

Q: As you know, a lot of products made in Japan, such as TV (television) sets, VCR's (Video Cassette Recorders), computers, motorcycles, autos, and others, are successfully sold in this country.) Now, do you think an important reason why Japanese products are competitive in the U.S. is because the Japanese have better technology, or not?

	March 1985
	%
Is	34
Is Not	60
Not sure	6

Source: Harris for Business Week, March 1985, national, n = 1253.

TABLE #9-4

Q: "Here are some statements people have made about Japanese industry. For each tell me whether you agree or disagree..."

"...The Japanese are very good at copying and imitating other people's products and inventions, but not much good at developing their own."

	March 1982 %
Agree	31
Disagree	63
Not sure	5

Source: Harris for Asaiti Shimbun, March 1982, national, n = 1599.

TABLE #9-5

Q: Now, do you think an important reason why Japanese products are competitive in the U.S. is because..."

"... Japanese companies are better managed, or not?"

	June 1984 %
Is	56
Is Not	34
Not sure	10

Source: Harris for Business Week, June 1984, national, n = 1256.

TABLE #9-6

Q: "There have been times when other countries have been able to sell their goods in this country at lower prices than American made goods. Here are some of the reasons that have been given as to why this is possible. For each one tell me whether you think it is a reason, or is not a reason, or whether you don't know if it is a reason?"

	Sept./Oct. 1977		
	A Reason	Not a Reason	Don't know
	%	%	%
Labor costs are cheaper in other countries.	92	4	4
Some countries sell their goods more cheaply in the U.S. than they do in their own countries just to get additional sales in the U.S.	57	24	20
Some governments subsidize the manufacturing of goods so that production costs are lower.	53	24	23
Manufacturing and processing plants in other countries are more modern and efficient and produce things more quickly.	18	68	14
Technology of manufacturing and processing is more advanced in other countries	13	73	14

Source: Roper Organization, Sept./Oct. 1977, national, n = 2004.

****

FINDING #10

MANY PEOPLE SEEM TO BUY AMERICAN CARS BECAUSE THEY ARE AMERICAN MADE, NOT BECAUSE AMERICAN CARS ARE FELT TO BE OF HIGHER QUALITY.

****

Detailed Observation

Of those planning to buy a car within the next two years, an overwhelming majority says they will buy an American made car because it is American made, not because it is of better quality.

TABLE #10-1

Q: "As things look now, do you think your next car will definitely be an American car, probably be an American car, probably be a foreign car, or definitely be a foreign car?

	May/ June 1984 %	June 1983 %	June 1982 %	May/ June 1981 %	June 1980 %	June 1979 %	June 1978 %	June 1977 %	June 1976 %	June 1975 %
Plan to buy a car in next year or two	29	22	21	22	22	23	23	24	22	22

Source: Roper Organization, national, (1975: n = 2004); (1976: n = 2004); (1977: n = 2001); (1978: n = 2002); (1979: n = 2006); (1980: n = 2006); (1981: n = 2003); (1982: n = 2000); (1983: n = 2000); (1984: n = 2000).

TABLE #10-2

It will be:*	May/ June 1984 %	June 1983 %	June 1982 %	May/ June 1981 %	June 1980 %	June 1979 %	June 1978 %	June 1977 %	June 1976 %	June 1975 %
Definitely American	53	52	52	57	52	52	67	58	71	67
Probably American	20	19	19	14	19	17	18	17	14	14
Probably foreign	13	14	14	14	14	13	9	12	5	9
Definitely foreign	7	10	10	10	10	9	5	9	5	5
Don't know	7	5	5	5	5	9	5	4	5	5

TABLE #10-3

Q: "Do you plan to buy an American car because you think American cars are better than foreign cars, or because you just prefer to buy American-made products?"*

	May/ June 1984 %	June 1983 %	June 1982 %	May/ June 1981 %
Better	17	20	25	25
Prefer to buy American	58	73	67	63
Both or don't know	25	7	8	12

*Note: These questions were asked to only those respondents who stated that they probably will buy a car within the next year or two. Percentages in both tables are for this subsample only.

Source: Roper Organization, national, (1975: n = 2004); (1976: n = 2004); (1977: n = 2001); (1978: n = 2002); (1979: n = 2006); (1980: n = 2006); (1981: n = 2003); (1982: n = 2000); (1983: n = 2000); (1984: n = 2000).

SECTION 4: TECHNOLOGICAL DEVELOPMENT AND PROTECTIONISM

Americans generally say that trade with Japan is "harmful" to the U.S. economy. Yet most people tend to reject protectionist measures as a remedy, favoring modernization and increased investment in technological research and engineering as solutions to America's difficulty in competing internationally.

****

FINDING #11

THERE IS A GENERAL FEELING AMONG AMERICANS THAT TRADE WITH JAPAN DOES MORE HARM THAN GOOD TO THE U.S. ECONOMY. HOWEVER, IN SPITE OF THIS FEELING, AMERICANS GENERALLY FEEL THAT THE WAY TO INCREASE PROSPERITY AND REGAIN OUR COMPETITIVE POSITION IS NOT THROUGH PROTECTIONISM BUT BY INCREASING PRODUCTIVITY THROUGH MODERNIZATION, INCREASING OUR RELIANCE ON HIGH TECHNOLOGY, AND, IMPORTANTLY, THROUGH BETTER ENGINEERING.

****

Detailed Observation

A solid majority of the public believes that competition from Japanese imports does more harm to this country than good.

TABLE #11-1

Q: "There has been a lot of talk lately about competition from Japanese-made products and the amount of Japanese-made products being sold in the United States, such as automobiles, steel, cameras, and high technology. Do you think import competition from Japan does more harm than good to this country, more good than harm, or doesn't it matter one way or the other?"

	Sept. 1985	July 1985
	%	%
More harm than good	56	60
More good than harm	23	20
Doesn't matter	19	17
It depends (vol.)	1	1
Not sure	1	2

Source: Harris, Sept. 1985, national, n = 1225, July 1985, national, n = 1252.

Detailed Observation

A majority of the public rejects imposing protectionist measures in order to increase prosperity or regain a competitive trading position. Rather, people want American industry to modernize and compete.

TABLE #11-2

Q: "Which of the following two statements more closely reflects your views?"

	May 1985 %
"U.S. automakers could develop better engineered and better priced cars and don't need import restrictions."	59
OR	
"Import restrictions on Japanese cars are necessary to protect the U.S. auto industry and its workers."	31
Don't know/No answer	10

Source: Associated Press/Media General, May 1985, national, n = 1402.

TABLE #11-3

Q: "For these statements, please tell me whether you strongly agree, mostly agree, mostly disagree, or strongly disagree."

	1985 Strongly Agree %
"...We should continue to manufacture a wide variety of products in the U.S. to avoid becoming dependent on foreign companies."	62
"...We should stop imports of foreign products when they cause Americans to lose their jobs."	47
"...Our government should support American companies that compete with foreign countries."	39

Source: Corporate Priorities Environmental Scan, Yankelovich, Skelly & White, Inc. for AT&T 1985, national, n = 2424 (16 years or older, including 99 college students living on campus).

TABLE #11-4

Q: "Here are three suggestions. Which one do you think the U.S. should do to correct this situation?"* (That U.S. products can not compete in world markets.)

	March 1983 %
"...Modernize uncompetitive industries, hold down wages, try to compete."	52
OR	
"...Increase trade barriers to keep foreign products out, even though other countries may respond by keeping our products out of their markets."	22
OR	
"...Get out of these industries and emphasize high technology industries instead."	17
None (vol)	3
Not sure (vol)	6

*NOTE: Asked of registered voters who feel U.S. products cannot compete in world markets any more (36% of total sample, n = 363).

Source: Yankelovich, Skelly & White/Time Magazine, March 1983, national registered voters, n = 1008.

Detailed Observation

Both younger and older people say that future economic growth will depend more on the development of high technology than on import restrictions or the revitalization of old industries.

TABLE #11-5

Q: "If you had to choose one, do you feel that future economic growth will come more from computers and high technology, revitalization of old industries or restrictions on imports from abroad?"

	June 1984	
	Ages 20-36	Ages 50-64
	%	%
Computers and high technology	72	59
Revitalization of old industries	11	13
Restrictions on imports from abroad	15	20
None (vol)	*	6
Not sure	2	-

* = less than .5 percent

Source: Harris for Business Week, June 1984, national, n = 1256. (Sample sizes for each age group is unknown.)

SECTION 5: TECHNOLOGICAL INVESTMENT AND BUSINESS

People favor business investment in technological research and development and say this is an appropriate use of business profits. Large numbers of Americans believe that businesses put too high a priority on executive bonuses and "perks," and, as a result, people feel that companies do not invest enough of their profits in essential research and development.

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FINDING #12

THE PUBLIC BELIEVES THAT RESEARCH AND DEVELOPMENT SHOULD BE HIGH ON THE LIST OF COMPANY USES OF PROFITS. YET PEOPLE BELIEVE THAT EXECUTIVE BONUSES AND DIVIDENDS HAVE A MUCH HIGHER ACTUAL PRIORITY.

****

Detailed Observation

More than nine out of ten say research and development is a justified use of business profits. In fact, the public ranks only worker salary and benefit increases as higher in importance, and a large majority feels that business should significantly increase its contribution to colleges and universities for basic scientific and technological research.

TABLE #12-1

Q: "Now let me read you a number of things companies do with their profits. For each tell me if you feel that it is a justified use for the profits that companies make or not..."

"...Expand research and development to turn out new and better quality products."

	Feb. 1984 %
Justified	94
Not justified	4
Not sure	2

Source: Harris for Business Week, Feb. 1984, national, n = 1251.

TABLE #12-2

Q: "Which 2 or 3 of these things do you think should big corporations do most with their profit money?

	June 1983 %
Increase salaries/benefits for their workers	64
Do research and development of new products and production methods	53
Contribute to charities/foundations	48
Pay dividends to stockholders	29
Expand their existing operations	24
Cover everyday operating costs of the company	21
Buy stock in other companies	4
Give bonuses to top executives	3

NOTE: Adds to more than 100% due to multiple responses.

Source: Roper Organization, June 1983, national, n = 2000.

TABLE #12-3

Q: "I would like to read you a number of statements about the whole question of scientific and technological research. For each, tell me if you agree or disagree. Major U.S. corporations should increase by a sizable amount the money they give to colleges and universities for basic scientific and technological research.

	Sept. 1983 %
Agree	82
Disagree	15
Not sure	3

Source: Harris for Southern New England Telephone, Sept. 1983, national, n = 1256.

Detailed Observation

However, most people think that, in fact, business expenditures for research and development are a much lower priority than they should be. Majorities say business is more likely to use profits for executive bonuses or to pay dividends to stockholders than to invest in research and development.

TABLE #12-4

Q: "There is a lot of talk in the news about profits made by big corporations -- how they should be greater or smaller, how they should be used one way or another, etc. Here is a list of things big corporations might do with the profits they make. (Card shown respondent.) Keeping in mind that it might vary somewhat from company to company, could you choose the 2 or 3 things you feel big corporations do most with their profit money?

	June 1983 %	June 1979 %
Give bonuses to top executives	50	32
Pay dividends to stockholders	50	39
Expand their existing operations	41	41
Do research and development of new products and production methods	37	42
Buy stock in other companies	34	25
Cover everyday operating costs of company	27	23
Contribute to charities/foundations	15	18
Increase salaries/benefits for their workers	11	23
Don't know	4	8

NOTE: Adds to more than 100% due to multiple responses.

Source: Roper Organization, national, (June 1983: n = 2000); (June 1979: n = 2006).

TABLE #12-5

	June 1983	
	What Business Should Do With Profits	What Business Actually Does With Profits
	%	%
Give bonuses to top executives	3	50
Pay dividends to stockholders	29	50
Expand their existing operations	24	41
Do research and development of new products and production methods	53	37
Buy stock in other companies	4	34
Cover everyday operating costs	21	27
Contribute to charities/foundations	48	15
Increase workers' salaries/benefits	64	11
Don't know	3	4

NOTE: Adds to more than 100% due to multiple responses.

Source: Roper Organization, June 1983, national, n = 2000.

SECTION 6: TECHNOLOGY AND THE FEDERAL GOVERNMENT

Americans favor government support for technological R&D and say that past government expenditures in this area have "paid off." In fact, a majority favors increased government support of research, particularly at the college and university level. Government leaders tend to reject a any national policy that would restrict high technology exports, but large numbers among them say that there should be some restrictions in this area.

****

FINDING #13

THE PUBLIC SAYS THE FEDERAL GOVERNMENT SHOULD ACTIVELY SUPPORT RESEARCH AND DEVELOPMENT IN HIGH TECHNOLOGY, SUPPORTING COOPERATIVE BUSINESS EFFORTS AND PROVIDING MORE FUNDING FOR ACADEMIC RESEARCH. IN LARGE PART, THESE SENTIMENTS ARE FUELED BY A BELIEF THAT FEDERAL SUPPORT IN THIS AREA HAS BEEN MONEY WELL SPENT.

****

Detailed Observation

More than four citizens out of five say the federal government should play actively support high technology research and development. Two out of three say the government should encourage companies to work together on high technology development.

TABLE #13-1

Q: "Some people believe there are areas where the government just shouldn't be involved and other areas where the government ought to play an important role. For each of the following, tell me whether you think the government's role ought to be very active, not active, or not at all active."

"...in supporting research and development in high technology."

	Jan. 1985
	%
very active	18
active	63
not active	12
not active at all	3
don't know	4

Source: Public Policy Analysis for the Los Angeles Times (The New York Stock Exchange and UCLA Graduate School of Management), Jan. 1985, national, n = 1014.

TABLE #13-2

Q: "The government should encourage companies to work together to develop high technology products, like the next generation of powerful computers, to enable American firms to compete better against the Japanese.

	Jan. 1985
	%
Strongly agree	15
Agree	68
Disagree	14
Strongly disagree	2
Don't know	2

Source: Public Policy Analysis for the Los Angeles Times (The New York Stock Exchange and UCLA Graduate School of Management), Jan. 1985, national, n = 1014.

Detailed Observation

More than two out of three people say the federal government should significantly increase the amount it gives to colleges and universities for basic scientific and technological research. And seven out of ten say that government spending for high technology research has been "effective" or "very effective" in achieving its goals.

TABLE #13-3

Q: "I would like to read you a number of statements about the whole question of scientific and technological research. For each, tell me if you agree or disagree..."

"...The Federal Government should increase by a sizable amount the money it gives to colleges and universities for basic scientific and technological research."

	Sept. 1983
	%
Agree	68
Disagree	28
Not sure	4

Source: Harris for Southern New England Telephone, Sept. 1983, national, n = 1256.

TABLE #13-4

Q: "For the moment please ignore whether the government should or should not be involved in each area and tell me whether you think the government is effective or ineffective in achieving its goals. In each case, please tell me whether the Federal Government is very effective, effective, ineffective or not effective at all..."

"...Supporting research and development in high technology areas."

	Jan. 1985
	%
Very effective/effective	71
Not effective/not at all effective	17
Don't know	11

Source: Public Policy Analysis for the Los Angeles Times, (The New York Stock Exchange and UCLA Graduate School of Management) Jan. 1985, national, n = 1014.

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FINDING #14

IN THE 1970S, HEALTH CARE, EDUCATION, AND ENERGY-RELATED RESEARCH WERE THE PUBLIC'S PRIORITIES FOR FEDERALLY FUNDED SCIENTIFIC AND TECHNOLOGICAL RESEARCH.

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Detailed Observation

In the 1970s, most people said improving health care was the top priority for government funded science and technology research. Developing and conserving energy, improving education and reducing crime also ranked as high priorities.

TABLE #14-1

Q: "I would like to talk with you about some of the things tax monies are used for. Science and technology can be directed toward solving problems in many different areas. Which areas on this list would you most like to receive science and technology funding from your tax money?"[1]

	Oct. 1979		Sept. 1976		July 1974		May 1972	
	%	Rank	%	Rank	%	Rank	%	Rank
Improving health care	50	(1)	57	(1)	69	(1)	65	(1)
Developing energy sources and conserving energy	46	(2)	-	-	-	-	-	-
Improving education	39	(3)	33	(3)*	48	(4)*	41	(5)
Reducing crime	36	(4)	37	(2)	58	(2)	59	(3)
Developing/improving methods for producing food	23	(5)	20	(6)	-	-	-	-
Reducing pollution	22	(6)	33	(3)*	50	(3)	60	(2)
Developing/improving national defense	16	(7)*	10	(10)	11	(11)*	11	(10)*
Preventing/treating drug addiction	16	(7)*	24	(5)	48	(4)*	51	(4)
Developing faster/safer public transportation	13	(9)	13	(8)	26	(7)	23	(7)
Improving auto safety	9	(10)*	15	(7)	29	(6)	38	(6)
Financing better birth control methods	9	(10)*	10	(9)	18	(9)	20	(8)
Discovering new basic knowledge about man and nature	8	(12)	9	(11)	21	(8)	19	(9)
Exploring outer space	6	(13)	7	(12)	11	(11)*	11	(10)*
Predicting/controlling the weather	4	(14)	5	(13)	14	(10)	11	(10)*

* Indicates tie in rank.

(1) Three areas were requested on the 1979 survey only.

Source: Institute for Survey Research, Temple University for the National Science Foundation, Oct. 1979, national, n = 1635; Opinion Research Corporation for the National Science Foundation, national, Sept., 1976: n = 2108; July/August, 1974: n = 2074; May 1972: n = 2009.

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FINDING #15

WHILE MOST LEADERS BELIEVE THERE SHOULD BE FEDERAL RESTRICTIONS ON HIGH TECHNOLOGY EXPORTS, THEY PREFER A CASE BY CASE APPROACH RATHER THAN A NATIONAL POLICY. THE PUBLIC GENERALLY IS UNDECIDED ABOUT THIS ISSUE.

****

Detailed Observation

Nearly three out of four government officials, public interest activists and corporate executives say there should be export restrictions on specific technologies. But majorities among all leadership groups support a case-by-case approach rather than a comprehensive national policy in this area.

TABLE #15-1

Q: "In your opinion are there any specific technologies, industries or companies that should be restricted with respect to exports?"

	May 1985			
	Government Officials	Media	Public Interest Activists	Corporate Executives
	%	%	%	%
Yes, there should be restrictions	72	52	76	77
No, there should be no restrictions	18	40	12	19
Not sure/no answer	10	5	12	4

Source: Corporate Priorities Environmental Scanning Service, Yankelovich, Skelly & White, Inc. for AT&T, May 1985, government officials: n = 85, media editors: n = 25, public interest activists: n = 25, corporate executives, n = 60.

TABLE #15-2

Q: "Some leaders say that the U.S. needs to set comprehensive national policy with regard to the exporting of technologies. Other leaders feel that the issue can only be dealt with on a case by case basis; and still others believe it would not be possible to control technology exports in the international marketplace. What's your view?"

	May 1985			
	Government Officials	Media	Public Interest Activists	Corporate Executives
	%	%	%	%
A comprehensive national policy	32	20	28	24
Case-by-case only	44	52	40	45
Not possible to control	18	24	16	28
Don't know	6	4	16	3

Source: Corporate Priorities Environmental Scanning Service, Yankelovich, Skelly & White, Inc. for AT&T, May 1985, government officials: n = 85, media editors: n = 25, public interest activists: n = 25, corporate executives, n = 60.

Detailed Observation

Almost half of the public is uncertain whether federal export restrictions on high technology products should exist.

TABLE #15-3

Q: "The federal government places restrictions on the export of certain products -- like some computers and high-technology components -- because it wants to prevent foreign countries from acquiring these products for one reason or another. As a way of increasing U.S. exports, would you favor or oppose lifting export restrictions on these kinds of products?"

	April/May 1985
	%
Favor	33
Oppose	21
Don't know	46

Source: Cambridge Reports, Inc., April/May 1985, national, n = 1417.

SECTION 7: TECHNOLOGY, SDI, AND SPACE EXPLORATION

Americans generally support the development of the Strategic Defense Initiative (SDI or "Star Wars"), but support is thin and may reflect confidence in the President and his judgment more than enthusiasm for the idea itself. If this interpretation is correct, public opinion is potentially volatile in this area.

The public's continuing support for the space program, however, is clear, in spite of the recent tragedy with the space shuttle. Most people say the accident was probably caused by an engineering or technological flaw, yet even this did not shake public confidence in science and technology.

****

FINDING #16

THE PUBLIC GENERALLY SUPPORTS DEVELOPMENT OF THE STRATEGIC DEFENSE INITIATIVE. EVIDENCE ALSO SUGGESTS THE PUBLIC THINKS THE SYSTEM WILL WORK.

****

Detailed Observation

A majority of Americans favors developing SDI.

TABLE #16-1

Q: "Taking all things into consideration, do you think the United States should develop a strategic defense initiative -- Star Wars -- or not?"

	Nov. 1985
	%
Develop	58
Not Develop	30
Not Sure	11
Refused	1

Source: Los Angeles Times, Nov. 1985, national, n = 2041

TABLE #16-2

Q: "Supporters say such weapons (Star Wars or the Strategic Defense Initiative) could guarantee protection of the United States from nuclear attack and are worth whatever they cost. Opponents say such weapons will not work, will increase the arms race, and that the research will cost many billions of dollars. How about you: Would you say you approve or disapprove of plans to develop such space-based weapons?"

	Nov. 1985	July 1985
	%	%
Approve	55	41
Disapprove	38	53
Don't know/No Opinion	6	5

Source: ABC News/Washington Post, Nov. 1985, national, n = 1507; July 1985, national, n = 1506.

TABLE #16-3

Q: "President Reagan has proposed developing a defensive system that would destroy incoming Russian missiles before they reach the United States. Some people say it might be difficult technologically, but we should try to develop it. Other people say it would be impractical, expensive and sounds like science fiction. Do you think we should try to develop the system, or not?"

	April 1983
	%
Should	67
Should not	25
No opinion	8

Source: CBS News/New York Times, April 1983, national, n = 1489.

Detailed Observation

Most Americans also believe that SDI could work, but that majority appears to be diminishing.

TABLE #16-4

Q: "Ronald Reagan has proposed developing a defensive nuclear system in space that would destroy incoming missiles before they reach the United States, a system some people call 'Star Wars.' Do you think such a system could work?"

	Nov. 1985	Jan. 1985
	%	%
Yes	58	62
No	27	23
Don't know/No answer	15	15

Source: CBS News/New York Times, Nov. 1985, national, n = 1659; New York Times/CBS News Foreign Policy Survey, Jan. 1985, national, n = 1525.

****

FINDING #17

HOWEVER, CONCERNS ABOUT BOTH THE DEFICIT AND MILITARY COST-OVERRUNS LEAD MANY TO QUESTION THE WISDOM OF SPENDING SO MUCH ON SDI AT THE PRESENT TIME. WHILE THE EVIDENCE IS NOT CONCLUSIVE, AT LEAST SOME OF THE PUBLIC'S SUPPORT FOR SDI SEEMS TO REFLECT CONFIDENCE IN THE PRESIDENT AND HIS JUDGMENT, RATHER THAN ENDORSEMENT OF SDI AS A CONCEPT, AND THEREFORE SUPPORT FOR SDI MAY BE SUBJECT TO CHANGE.

****

Detailed Observation

Nearly two out of three view the $26 billion earmarked for the development of SDI as too much to spend, and the public is split on whether SDI is worth the money it will cost to develop.

TABLE #17-1

Q: "Although no one has yet estimated how much it will cost to develop Star Wars, President Reagan has asked for a total of 26 billion dollars over the next five years for 'research' on the strategic defense initiative, considering the current budget situation, would you say that's too much to spend on research, or is it about the right amount, or would you say it isn't enough?"

	Nov. 1985
	%
Too Much	59
About the Right Amount	27
Not Enough	7
Not Sure	7

Source: Los Angeles Times, Nov. 1985, national, n = 2041.

TABLE #17-2

Q: "Do you think this system ("Star Wars" defense or defensive nuclear system in space that would destroy incoming missiles before they reached the United States) would be worth the amount of money it would cost?"

	Jan. 1985
	%
Yes	40
No	46
Don't know/No Answer	14

Source: CBS News/New York Times, Jan. 1985, national, n = 1525.

Detailed Observation

Finally, while the evidence is not conclusive, key differences in question wording suggest that at least some (and perhaps much) of the public's support for the system reflects public confidence in the President and his judgment, rather than a ringing endorsement of SDI as a concept. For example, when the public is asked about "laser-beam weapons in outerspace" with no mention of either the President or SDI, their level of support is much lower. (Compare the table below to Table #16-3.)

TABLE #17-3

Q: "All in all, do you favor or oppose spending billions of dollars for the U.S. to develop a laser-beam and particle-beam anti-nuclear missile defense system in outer space and on the ground?"

	March 1985	April 1983
	%	%
Favor	39	36
Oppose	56	58
Not Sure	5	5

Source: Harris, March 1985, national, n = 1256, April 1983, national, n = 1250.

****

FINDING #18

THE PUBLIC GENERALLY SUPPORTS CONTINUED SPACE EXPLORATION. HOWEVER, EVEN IMMEDIATELY AFTER THE MOON LANDING, MOST QUESTIONED THE AMOUNT OF MONEY BEING SPENT ON THE SPACE PROGRAM AND SAID THIS WAS A PLACE TO CUT THE BUDGET.

****

Detailed Observation

A majority of the public favors continuing the exploration of outer space.

TABLE #18-1

Q: "There are a number of things that have changed rather drastically over the past 20 years. Here is a list of some of them. Would you read down that list and for each one tell me whether you'd line to see continued advances and developments on it in the future, or whether you think we've gone as far as we should on it now, or whether we've already gone too far on it now..."

"...exploration of space."

	Aug. 1981 %
Would like continued advances	57
Gone as far as should	26
Gone too far now	12
Don't know	5

Source: Roper Organization, Aug. 1981, national, n = 2000. (Subpopulation: 'Y' half of sample, n = 1,000.)

Detailed Observation

However, even immediately after the first moon landing in July 1968, only a minority wanted to increase spending in this area, and a majority said it was their first choice for federal budget cuts, ahead of welfare benefits, aid to cities, military defense and subsidies to farmers.

TABLE #18-2

Q: "The United States is now spending many billions of dollars on space research. Do you think we should increase these funds, keep them the same, or reduce these funds?"

	Jan. 1969	June 1965
	%	%
Increase	14	16
Keep same	41	42
Reduce	40	23
No opinion	5	9

Source: Gallup, Jan. 1969, national, n = 1503; June 1965, national, n = 3536.

TABLE #18-3

Q: "There has been much discussion about attempting to land a man on the planet Mars. How would you feel about such an attempt--would you favor or oppose the United States setting aside money for such a project?"

	July 1969
	%
Favor	39
Oppose	53
No opinion	8

Source: Gallup, July 1969, national, n = 1555.

TABLE #18-4

Q: "Now here is a list of things the Federal Government currently spends money on. If we get to the point where we have to cut government expenses, in which two or three of those areas do you think the most cuts should be made?"

	May 1978 %
Space exploration	51
Welfare benefits	38
Aid to big cities	35
Military defense	18
Subsidies to farmers	17

NOTE: Adds to more than 100% due to multiple responses.

Source: Roper Organization for H & R Block, May 1978, national, n = 2007.

****

FINDING #19

AN OVERWHELMING MAJORITY OF THE PUBLIC REGARDS THE SPACE SHUTTLE AS A MAJOR TECHNOLOGICAL "BREAKTHROUGH" AND WORTH THE MONEY SPENT ON ITS DEVELOPMENT.

****

Detailed Observation

Subsequent to its first launching, almost eight out of ten individuals said the development of the space shuttle was a major breakthrough for U.S. technology. A clear majority felt that it was worth the "several" billion dollars the government spent on its development.

TABLE #19-1

Q: "Do you feel the recent success of launching the U.S. space shuttle and then getting it back to a safe landing on earth was a major breakthrough for U.S. technology and know-how, a minor breakthrough, or not much of a breakthrough?"

	May 1981
	%
A major breakthrough	76
A minor breakthrough	13
Not much of a breakthrough	10
Not sure	1

Source: Harris, May 1981, national, n = 1250.

TABLE #19-2

Q: "It could cost the U.S. government several billion dollars to develop the full potential of the space shuttle over the next ten years. All in all, do you feel this space program is worth spending that amount of money on, or do you think it is not worth it?"

	May 1981
	%
Worth it	63
Not worth it	33
Not sure	4

Source: Harris, May 1981, national, n = 1250.

****

FINDING #20

PUBLIC SUPPORT FOR THE SPACE SHUTTLE STEMS, IN PART, FROM PERCEPTIONS ABOUT LIKELY BENEFITS ON EARTH, INCLUDING SCIENTIFIC AND MILITARY APPLICATIONS.

****

Detailed Observation

Majorities believe there will be numerous practical military and scientific applications as a result of space shuttle flights.

TABLE #20-1

Q: "There are a number of practical uses that the space shuttle may provide by taking as many as 400 flights into space and back over the next several years. Tell me if, in your judgment, each use I read off to you would be very important, only somewhat important, or not very important at all..."

	May 1981			
	Very Important %	Somewhat Important %	Not Very Important %	Not Sure %
"...Developing a military capability in space beyond what the Russians are doing."	68	20	10	2
"...Doing scientific research on metals, chemicals, and living cells in space."	55	27	16	2

Source: Harris, May 1981, national, n = 1250.

****

FINDING #21

PUBLIC SUPPORT FOR THE SPACE SHUTTLE PROGRAM REMAINS STRONG, EVEN AFTER THE JANUARY EXPLOSION. SOLID MAJORITIES SAY THE ORIGINAL FLIGHT SCHEDULE SHOULD BE RESUMED, AND SUPPORT FOR FUNDING HAS NOT DECLINED.

****

Detailed Observation

Polls taken after the space shuttle explosion reveal strong support for continuing the program. Solid majorities believe that the program is worth its costs and risks, and that the original flight schedule should be resumed.

TABLE #21-1

(Exact question wording not available)

	Jan. 1986
	%
Support space shuttle program	79
Oppose space shuttle program	16
No opinion	5

Source: ABC News, Jan. 28, 1986, national, n = 507.

TABLE #21-2

Q: "Given the costs and risks involved in space exploration, do you think the space shuttle is worth continuing or not?"

	Jan. 1986
	%
Worth continuing	80
Not worth continuing	14
No opinion	6

Source: New York Times/CBS News, Jan. 30-31, 1986, national, n = 1120.

TABLE #21-3

Q: "Assuming an investigation of the shuttle explosion shows that a similar incident can be avoided, would you feel that the shuttle program should resume its original schedule, should it be cut back, or should it be ended all together?"

	Jan. 1986
	%
Resume	73
Be cut back	16
End	6
Don't know	5

Source: USA Today, Jan 29, 1986, national, n = 808.

Detailed Observation

The public's view about funding for the space shuttle program remains at about the same level after the recent explosion as before the accident.

TABLE #21-4

Q: "I'm going to read you two statements and ask you which one comes closest to expressing your views -- the first or the second:

1. The Challenger disaster leads me to believe we should reduce the amount we are spending on the space shuttle program.

Or

2. Despite the Challenger disaster, I think we should keep the level of spending for the space shuttle program essentially as it is."

	Jan. 1986
	%
Keep spending as is	69
Reduce spending	25
Don't know	6

Source: Roper Organization for U.S. News & World Report, Jan. 29-30, 1986, national, n = 1003.

TABLE #21-5

Q: "Are we spending too much money, too little money or just the right amount of money on space exploration?"

	Jan. 1986	March 1982	April 1981
	%	%	%
Too much	40	42	36
Just about right	37	27	37
Too little	12	18	18
No opinion	11	13	10

Source: New York Times/CBS News, Jan. 30-31, 1986, national, n = 1120. (Surveys conducted in the other years approximate this sample size.)

TABLE #21-6

Q: "Should the amount of money being spent on the U.S. space program be increased, kept at current levels, decreased, or ended all together?"

	(After Shuttle Accident) Jan. 1986	Feb. 1984
	%	%
Increased	26	21
Current levels	50	48
Decreased	14	23
Ended	5	5
Don't know	5	3

Source: Gallup for Newsweek, Jan 29.-30, 1986, national, n = 533. .(The sample size for the 1984 survey was not available.)

TABLE #21-7

Q: "Would you be willing to pay more in taxes if it was necessary in order to keep the space shuttle program going?"

	Jan. 1986
	%
Willing	46
Unwilling	42
Depends (vol.)	9
No opinion	3

Source: New York Times/CBS News, Jan 30-31, 1986, national, n = 1120.

Detailed Observation

A majority of the public does not believe there has been too much emphasis on manned space flights, but rather that the balance between manned and unmanned flights has been "about right."

TABLE #21-8

Q: "Do you think the U.S. has been putting too much emphasis on the manned space flights like the space shuttle program and not enough emphasis on unmanned space flights like the Voyager probe of the other planets or do you think the balance is about right?"

	Jan. 1986
	%
Too much emphasis on manned flights	16
Balance is about right	72
No Opinion	12

Source: New York Times/CBS News, Jan. 30-31, 1986, national, n = 1120.

TABLE #21-9

Q: "Some people say the United States should concentrate on unmanned missions like the Voyager probe. Others say it is important to maintain a manned space program as well. Which comes closer to your view?"

	Jan. 1986
	%
Manned	67
Unmanned	21
Don't know	12

Source: Gallup for Newsweek, Jan. 29-30, 1986, national, n = 533.

****

FINDING #22

WHILE MOST PEOPLE THINK A TECHNOLOGICAL OR ENGINEERING FLAW CAUSED THE SHUTTLE ACCIDENT, CONFIDENCE IN SCIENCE AND TECHNOLOGY WAS NOT SHAKEN BY THE ACCIDENT. PEOPLE SAY THAT THE SHUTTLE ACCIDENT IS PART OF THE PRICE WE MUST PAY TO EXPLORE OUTER SPACE.

****

Detailed Observation

Almost half of the public thinks the cause of the space shuttle accident was related to technology or engineering -- construction/maintenance or computer failure.

TABLE #22-1

Q: "What is your best guess about what caused (the space shuttle) explosion? Was it poor decisions by NASA leaders, or a mistake in construction and maintenance, or sabotage, or computer failure or was it something else?"

	Jan. 1986 %
Construction and maintenance	38
Computer failure	10
Sabotage	6
Poor decision by NASA leaders	3
Something else	28
No opinion/Don't know	17

Source: New York Times/CBS News, Jan. 30-31, 1986, national, n = 1120.

Detailed Observation

More than half the public say their confidence in science and technology was high before the accident, and only about six percent said it was "low." Eight in ten say their faith in science and technology is the same as it was before the tragedy, and only a small minority say their faith has been "shaken."

TABLE #22-2

Q: "Before the accident, was your confidence in science and technological ability quite high, or rather low, or somewhere in between?"

	Jan. 1986 %
Confidence was high	54
Confidence was somewhere in between	40
Rather low/don't know	6

Source: Roper Organization for U.S. News & World Report, Jan. 29-30, 1986, national, n = 1003.

TABLE #22-3

Q: "Does this week's space shuttle accident shake your faith in science and technology or is your degree of confidence in science and technology the same now as it was before the accident?"

	Jan. 1986 %
"My faith in science and technology is the same as it was before"	80
"My faith in science and technology has been shaken"	16
Don't know	4

Source: Roper Organization for U.S. News & World Report, Jan. 29-30, 1986, national, n = 1003.

Detailed Observation

While most people say an accident like the shuttle explosion was eventually 'bound to happen,' a solid majority feels that these deaths are part of "the price we must pay for the exploration and mastery of space.

TABLE #22-4

(Exact question wording not available)

	Jan. 1986 %
Expected such a calamity to happen	46
Repeated U.S. successes in space meant that a tragedy like this probably wouldn't happen	45
Don't know	9

Source: Roper Organization for U.S. News & World Report, Jan. 29-30, 1986, national, n = 1003.

TABLE #22-5

Q: "Regardless of what you think about what happened on the space shuttle on Tuesday, do you think something like this was bound to happen to the space shuttle sooner or later?"

	Jan. 1986 %
Bound to happen	68
Not bound to happen	22
No opinion	10

Source: New York Times/CBS News, Jan. 30-31, 1986, national, n = 1120.

TABLE #22-6

Q: "I'm going to read you two statements and ask you which one comes closest to expressing your views -- the first or the second:

1. The shuttle deaths (resulting from the Challenger accident) were a regrettable disaster but nevertheless a price we must be willing to pay for the exploration and mastery of space."

Or

2. The shuttle deaths (resulting from the Challenger accident) were an unacceptable price to pay for the exploration and mastery of space."

	Jan. 1986
	%
A price we must pay	73
An unacceptable price	22
Don't know	5

Source: Roper Organization for U.S. News & World Report, Jan. 29-30, 1986, national, n = 1003.

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FINDING #23

THE PUBLIC'S CURRENT VIEWS ABOUT THE SPACE PROGRAM MAY BE DEEPLY COLORED BY INTENSE PATRIOTIC AND EMOTIONAL REACTIONS.

****

Detailed Observation

Almost a third of the public said the space shuttle crash upset them more than two other recent tragedies -- the December military crash in Newfoundland and the 1983 terrorist bombing of the Marine barracks in Lebanon.

TABLE #23-1

Q: "Which of these three recent events upset you the most:

1. The October 1983 terrorist bombing of the Marine barracks in Lebanon.

Or

2. The January 1986 space shuttle crash killing all aboard.

Or

3. The December 1985 plane crash killing 248 military personnel in Newfoundland."

	Jan. 1986
	%
The Marine barracks bombing	34
The space shuttle crash	32
The military crash in Newfoundland	24

Source: Roper Organization for U.S. News & World Report, Jan. 29-30, 1986, national, n = 1003.

SECTION 8: VIEWS OF TECHNOLOGY

Part 1: Technology's General Impact

Americans have great faith that technology can solve pressing national problems and they believe that technology has generally improved the quality of life. At the same time, people are aware of at least some of the risks of technology, and their positive view of technology is not based on what might be called "blind optimism."

Part 2: Technology's Impact on Jobs

In the workplace, people say technology has made many jobs safer and increased productivity; but Americans are uncertain whether technology creates more jobs than it takes away. In spite of their unease, however, people oppose laws that would limit the ability of business to make technological changes in the workplace.

Part 3: Social Control of Technology

About the desirability of controls over technology, public opinion is distinctly mixed. People oppose controls that would restrict the development of useful new technology, yet they are concerned about new threats to public safety.

Part 4: Public Awareness and Potential for Involvement

The public is moderately interested in scientific and technological matters, and feels that their basic understanding of these issues is "adequate." Further, people say that scientific and technological development is an area where they do not have enough information to make informed judgments or decisions.

Part 1: Technology's General Impact

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FINDING #24

THE PUBLIC GENERALLY BELIEVES THAT SCIENCE AND TECHNOLOGY DO MORE GOOD THAN HARM AND HAVE CHANGED LIFE FOR THE BETTER. HOWEVER, THERE IS EVIDENCE SUGGESTING THAT SLIGHTLY SMALLER NUMBERS OF AMERICANS HOLD THIS VIEW TODAY THAN A FEW YEARS AGO.

****

Detailed Observation

A large majority consistently says science and technology do more good than harm; however, public sentiment, which had been increasing from 1972 to 1983, has declined rather sharply in the past two years. Since the public is most aware of technological advances in the field of medicine, one explanation for this fluctuation is that the first successful artificial heart transplant occurred in December 1982. While the public's initial reaction was enthusiastic, more recent concerns about cost and effectiveness may have have affected their view.

TABLE #24-1

Q: "Overall, would you say that science and technology do more good than harm, more harm than good, or about the same amount of each?"

	Jan/Feb[1] 1985	Jan/Feb[1] 1984	Jan/Feb[1] 1983	Jan/Feb[1] 1982	Sept[2] 1976	July[2] 1974	May[2] 1972
	%	%	%	%	%	%	%
More good	58	63	73	62	52	57	54
About the same of each	32	27	21	26	37	31	31
More harm	5	5	3	6	4	2	4
Don't know	5	5	3	7	7	10	11

[1] Source: Cambridge Reports, Inc. Jan./Feb. 1985, national, n = 1430. The Jan./Feb. 1984 through 1982 surveys also were national and approximated the 1985 sample size.

[2] Source: Opinion Research Corporation for the National Science Foundation, national, (Sept. 1976: n = 2108); (July/Aug. 1974: n = 2074); (May 1972: n = 2209).

TABLE #24-2

Q: "All in all, if you had to say, in the past, do you think science and technology did more good than harm for the human race, or more harm than good?

	Sept. 1983
	%
More good than harm	83
More harm than good	14
Neither (vol)	1
Not sure	2

Source: Harris for Southern New England Telephone, Sept. 1983, national, n = 1256.

Detailed Observation

In general, a large majority of Americans believes that science and technology have changed life for the better. However, there is some evidence suggesting a decline in the number of people holding this view (from about 70 percent in the 1970s to about 55 percent in the mid-1980s). It is unclear whether this trend indicates a real shift in public opinion or if it is merely the result of different question wording.

TABLE #24-3

Q: "Advancing technology has resulted in a number of changes in our way of life--some good, some not so good. On the one hand we have such things as color television, pocket calculators, micro-wave ovens and whole new industries. On the other hand we have such things as people thrown out of work as machines take over their jobs, electronic eavesdropping devices, atomic bombs, and more pollution in the air. All things considered, do you think life is better today than 50 years ago because of advanced technology, or worse today, or just different -- no better or no worse?

	Dec. 1983	Dec. 1978
	%	%
Life is better today	55	59
Life is worse today	15	19
Just different--no better, no worse	27	22

Source: Roper, national, (Dec. 1983: n = 2000); (Dec. 1978: n = 1997).

TABLE #24-4

Q: "Have science and technology changed life for the better or for the worse?"

	Sept. 1976 %	July 1974 %	May 1972 %
Better	71	75	70
Worse	7	5	8
Both	12	11	11
Neither/No Effect/No opinion	10	9	11

Source: Opinion Research Corporation for the National Science Foundation, national, (Sept. 1976: n = 2108); (July 1974: n = 2074); (May 1972: n = 2209).

Detailed Observation

Whatever the trend, however, the public's "faith" in technology is considerable. As recently as 1982, about three Americans in four said that technological "breakthroughs" will solve many (or all) of the country's problems.

TABLE #24-5

Q: "Most problems can be solved by applying more and better technology."

	1982 %
Agree	77
Disagree	21
Don't know	2

Source: Research and Forecasts, Inc. for the Continental Group, 1982, national, n = 1310. (Published in Science Indicators 1982, The National Science Board, Washington, DC).

****

FINDING #25

BOTH LEADERS AND THE PUBLIC HAVE LONG FELT THAT TECHNOLOGICAL DEVELOPMENT INVOLVES RISKS, BUT THEY HAVE DIFFERENT VIEWS ABOUT THEIR NATURE AND EXTENT -- WITH THE PUBLIC SAYING TECHNOLOGY'S RISKS ARE GREATER, AND BUSINESS LEADERS IN PARTICULAR SAYING THAT RISKS HAVE BEEN EXAGGERATED BY EVENTS.

****

Detailed Observation

Even in the 1970s, when their feelings about technology may have been more positive than they are today, most Americans said that science and technology caused a substantial amount (but not most) of our problems. In fact, most people felt that "we've only seen the tip of the iceberg with regard to the risks associated with modern technology," but leaders tended to disagree with this view. Many more business leaders than the public felt events such as the Three Mile Island and Love Canal episodes cause technological risk to be exaggerated.

TABLE #25-1

Q: "Do you feel that science and technology have caused most of our problems, some of our problems, few of our problems, or none of our problems?"

	Sept. 1976	July/Aug. 1974	May 1972
	%	%	%
Most of our problems	6	6	7
Some of our problems	45	50	48
Few of our problems	28	29	27
None of our problems	14	9	9

Source: Opinion Research Corporation for the National Science Foundation, national, (Sept. 1976: n = 2108); (July/Aug. 1974: n = 2074); (May 1972: n = 2209).

TABLE #25-2

Q: "As a general indication of your views on risk, technology, and the future, tell me whether you tend to agree or disagree with the following statements..."

(Number of respondents)	Dec. 1979 Public (1488) %	Corporate Executives (402) %	Investors/ Lenders (104) %	Congress (47) %	Federal Regulators (47) %
"...Society has only perceived the tip of the iceberg with regard to the risks associated with modern technology."					
Agree	62	19	20	47	38
Disagree	28	78	71	51	60
"...The risks associated with advanced technology have been exaggerated by events such as Three Mile Island and Love Canal."					
Agree	53	88	84	55	47
Disagree	40	11	14	38	49

Source: Harris for March and McLennon, Dec. 1979/March 1980, national. (See the number in parentheses for the sample size of each group.)

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FINDING #26

THE PUBLIC'S SUPPORT FOR DEVELOPING NEW TECHNOLOGY RESTS, IN LARGE PART, ON THE PERCEPTION THAT SCIENCE AND TECHNOLOGY, AND TECHNOLOGICAL KNOW-HOW ARE LARGELY RESPONSIBLE FOR THE HIGH STANDARD OF LIVING IN THE U.S.

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Detailed Observation

Solid majorities agree that science and technology are responsible for both our high standard of living and the key to raising it still further.

TABLE #26-1

Q: "Technological know-how is largely responsible for our standard of living in the United States."

Oct. 1979				
Strongly Agree	Agree	Disagree	Strongly Disagree	No Opinion
%	%	%	%	%
24	63	8	11	4

Source: Institute for Survey Research for the National Science Foundation, Oct. 1979, national, n = 1635.

TABLE #26-2

Q: "Through science and technology we can continue to raise our standard of living."

	1982
	%
Agree	80
Disagree	18
Don't know	3

Source: Research and Forecasts, Inc. for the Continental Group, 1982, national, n = 1310. (Published in Science Indicators 1982, The National Science Board, Washington, DC).

****

FINDING #27

BUT PARALLELING THEIR FEELING THAT TECHNOLOGY IS NOT RISK-FREE IS THE PUBLIC'S SENSE THAT THE DEVELOPMENT OF NEW TECHNOLOGY HAS BOTH POSITIVE AND NEGATIVE EFFECTS ON THEIR LIVES.

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Detailed Observation

A clear majority of the public perceives scientific and technological developments as having both positive and negative impacts. Science and technology have, in people's view, helped make the U.S. prosperous, productive and militarily strong, and also had a positive effect on efficiency, leisure time and personal growth. On the other hand, a majority feels they have contributed to materialism, waste and an impersonal society.

TABLE #27-1

Q: "Now I'd like you to think back over the changes from scientific and technological developments we've just been talking about. In general, as far as you personally are concerned, do you think these changes will have a positive effect, a negative effect, or not much effect either way on..."

	Oct. 1979			
	Positive Effect	Negative Effect	Not Much Effect	Not Sure
	%	%	%	%
"...Your ability to do things better and more efficiently."	65	23	10	2
"...Providing you with more leisure time."	58	29	11	2
"...Your personal growth and development."	51	34	14	1

Source: Harris for Southern New England Telephone, Sept. 1983, national, n = 1256.

TABLE #27-2

Q: "Do you agree that scientific research and technological development..."

	Nov. 1977		
	Agree	Disagree	Not Sure
	%	%	%
"...Are necessary to keep the country prosperous."	92	4	4
"...Are the only way to clean up air and water pollution	69	20	11
"...Are the main factors in increasing productivity	69	16	15
"...Make people want to acquire more possessions rather than enjoying nonmaterial experiences."	65	22	13
"...Are the real basis of our military strength."	64	21	15
"...Will eventually mean a four-day workweek."	62	21	17
"...Make everything bigger and more impersonal."	56	20	14
"...Tend to overproduce products, and this is wasteful."	52	36	12

Source: Harris, Nov. 1977, national, n = 1520.

Part 2: Technology's Impact on the Workplace

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FINDING #28

IN GENERAL, PEOPLE FEEL THAT NEW TECHNOLOGY IN THE WORKPLACE HAS IMPROVED JOB SAFETY, INCREASED PRODUCTIVITY, AND CREATED MORE JOB OPPORTUNITIES.

****

Detailed Observation

Majorities feel that new technology has reduced health hazards on the job and increased both productivity and job opportunities.

TABLE #28-1

Q: "Now, here are some changes that are taking place or are likely to take place in plants and manufacturing. For each, tell me if you think that it will make things a lot better, somewhat better, somewhat worse, or a lot worse..."

"...Installation of high technology will enable workers to increase their productivity."

	Sept. 1983
	%
A lot better	51
Somewhat better	40
Somewhat worse	4
A lot worse	2
Not sure	3

Source: Harris for Southern New England Telephone, Sept. 1983, national, n = 1256.

TABLE #28-2

Q: "Now I'd like you to think back over the changes from scientific and technological developments we've just been talking about. In general, as far as you personally are concerned, do you think these changes will have a positive effect, a negative effect, or not much effect either way on..."

	Sept. 1983			
	Positive Effect	Negative Effect	Not Much Effect	Not Sure
	%	%	%	%
"...Reducing the risks of health hazards on the job."	60	28	8	4
"...Opening up more job opportunities."	52	20	25	3

Source: Harris for Southern New England Telephone, Sept. 1983, national, n = 1256.

****

FINDING #29

HOWEVER, THE PUBLIC IS OF TWO MINDS ABOUT WHETHER THE NET EFFECT OF TECHNOLOGY WILL INCREASE OR DECREASE THE NUMBER OF JOBS. AMONG UNION LEADERS, A MAJORITY BELIEVES TECHNOLOGY CREATES MORE JOBS THAN IT TAKES AWAY.

****

Detailed Observation

While the public is uncertain about the impact of technology on the number of jobs in the economy, evidence suggests that union leaders see technology's net impact as positive.

TABLE #29-1

Q: "Some people say that scientific and technological changes cause unemployment because people's jobs are replaced by machines. Others argue that while some jobs may be lost in specific areas, scientific and technological changes increase the total number of jobs over the long run. Which view is closer to the truth?"

	Jan./Feb. 1985	Jan./Feb. 1984	Jan./Feb. 1983	Jan./Feb 1982
	%	%	%	%
Increases Number of Jobs	35	45	42	39
Decreases Number of Jobs	45	35	40	39
Don't know	20	20	19	22

Source: Cambridge Reports, Inc., Jan./Feb. 1985, national, n = 1430. The Jan./Feb. 1984 through 1982 surveys also were national and approximated the 1985 sample size.

TABLE #29-2

Q: "Do advances in technology and automation in the U.S. cause a loss of jobs, an increase in jobs or have very little effect?"

	Sept. 1983
	%
A loss of jobs	44
An increase of jobs	17
Very little effect	30
No opinion	9

Source: Audits and Surveys for the Merit Report, Sept. 1983, national, n = 1205.

TABLE #29-3

Q: "In the future, automation will force many people to change jobs if they want to keep working"

	May/June 1978
	%
Agree	56
No strong opinion	26
Disagree	16

Source: Yankelovich, Skelly & White, Inc., for the American Council of Life Insurance, May/June 1978, national, n = 1508.

****

FINDING #30

HOWEVER, IN SPITE OF THEIR FEELING THAT TECHNOLOGY MAY DECREASE THE NUMBER OF JOBS, THE PUBLIC OPPOSES LAWS TO LIMIT TECHNOLOGICAL CHANGE IN THE WORKPLACE.

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Detailed Observation

Almost two out of three oppose laws that would limit the ability of business and industry to make technological changes in the workplace.

TABLE #30-1

Q: "Do you favor or oppose laws that would limit the ability of business and industry to make technological changes in the workplace?"

	Jan./Feb. 1985 %	Jan./Feb. 1983 %
Favor	26	21
Oppose	56	60
Don't know	18	19

Source: Cambridge Reports, Inc., Jan./Feb. 1985, national, n = 1430. The Jan./Feb. 1983 survey also was national and approximated the 1985 sample size.

Part 3: Social Control of Technology

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FINDING #31

SINCE THE PUBLIC HAS NEVER SEEN "TOO MUCH TECHNOLOGY" AS A MAJOR CAUSE OF TODAY'S PROBLEMS, PEOPLE WELCOME GREATER EMPHASIS ON TECHNOLOGICAL DEVELOPMENT.

****

Detailed Observation

In a ten year span, "too much technology" consistently was rated low on the list of major causes of current problems.

TABLE #31-1

Q: "Now here is a list of possible causes of some of our problems in this country. (Card shown respondent) Would you call off the ones you think are the major causes of our problems today?"

	Oct. 1983 rank	Feb. 1979 rank	Feb. 1977 rank	Oct. 1975 rank	Oct. 1974 rank	Oct. 1973 rank
A letdown in moral values	1	1	1	3	4	3*
Permissiveness in the courts	2	4*	3	5	5*	8
Too much commitment to other nations in the world	3	6	7	4	3	5
Wrongdoing in government	4	4*	4*	1	1	1*
Selfishness, people not thinking of others	5	2*	2	6	5*	1*
Permissiveness of parents	6	7	4*	7	7*	7
Too much emphasis on money/materialism	7	8	6	8	7*	6
Lack of good leadership	8	2*	8	2	2	4
Radical attempts to force change	9	9	9	9	9	9
Too much technology	10	10	10	10	10	10*
Growing conservatism	11*	11*	12	12	11	10*
Too little interest in other nations in the world	11*	11*	11	11	12	10*

* Indicates tie in rank

Source: Roper Organization, national, (Oct. 1983: n = 2004); (Feb. 1979: n = 2004); (Feb. 1977: n = 2004); (Oct. 1975: n = 2007); (Oct. 1974: n = 1998); (Oct. 1973: n = 1263).

Detailed Observation

A solid majority of the public welcomes more emphasis on technological development. This view is held even more strongly by those who are better educated.

TABLE #31-2

Q: "Here is a list of various changes in our way of life that might take place in the near future. Please tell me for each one, if it were to happen whether you think it would be a good thing, a bad thing or don't you mind?"

"...More emphasis on the development of technology."

	Jan. 1981
	%
Good	67
Bad	10
Don't mind	21
Don't know	2

Source: Gallup for Applied Research in the Apostolate (CARA) Jan./Dec. 1981, national, n = 1729.

TABLE #31-3

Q: "Here are some social changes which might occur in coming years. Would you welcome these or not?

"...More emphasis on technological improvements."

	Welcome	Not Welcome	Don't Know
	%	%	%
Total Sample:	75	12	13
Educational Level:			
Grade School	59	13	28
High School	78	11	11
College	78	15	7

Source: Gallup, April 1977, national, n = 1523.

****

FINDING #32

LEADERS OPPOSE SOCIETAL CONTROL OF TECHNOLOGICAL DEVELOPMENT, BUT THE PUBLIC HAS MIXED FEELINGS. WHILE SAYING THE DEVELOPMENT OF NEW TECHNOLOGY SHOULD BE UNREGULATED WHENEVER POSSIBLE, MAJORITIES ALSO SAY THAT UNLESS DEVELOPMENT IS RESTRAINED, PUBLIC SAFETY WILL BE JEOPARDIZED. THE PUBLIC'S AMBIVALENCE ABOUT THIS ISSUE INDICATES THAT PUBLIC OPINION IS NOT "WORKED THROUGH."

****

Detailed Observation

A majority of the public simultaneously says that whenever possible, the development of advanced technology should be as unregulated and that unless technological development is restrained, the future safety of our society will be jeopardized. Among leaders, large majorities of corporate executives, investors/lenders and government officials say that technological development should be uninhibited in all respects.

TABLE #32-1

Q: "As a general indication of your views on risk, technology, and the future, please tell me whether you agree or disagree with the following statements?"

"...Development of advanced technology should continue in as uninhibited a regulatory environment as reasonably possible."

	Dec. 1979/March 1980				
(Number of respondents)	Public (1488)	Corporate Executives (402)	Investors/ Lenders (104)	Congress (47)	Federal Regulators (47)
	%	%	%	%	%
Agree	68	91	90	77	66
Disagree	24	8	9	23	30
Not sure	8	1	1	-	4

Source: Harris for March and McLennon, Dec. 1979/March 1980, national. See number in parentheses for the sample size for each sub-group.

TABLE #32-2

Q: "As a general indication of your views on risk, technology, and the future, please tell me whether you agree or disagree with the following statements..."

"...Unless technological development is restrained, the overall safety of our society will be jeopardized significantly in the next 20 years."

	Dec. 1979/March 1980				
(Number of respondents)	Public (1,488)	Corporate Executives (402)	Investors/ Lenders (104)	Congress (47)	Federal Regulators (47)
	%	%	%	%	%
Agree	56	5	6	23	21
Disagree	39	94	93	74	77
Not sure	6	1	1	2	2

Source: Harris for March and McLennon, Dec. 1979/March 1980, national. See number in parentheses for the sample size for each sub-group.

Part 4: Public Awareness and Potential for Involvement

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FINDING #33

THE PUBLIC IS MODERATELY INTERESTED IN NEW DEVELOPMENTS IN SCIENCE AND TECHNOLOGY; THOSE WHO ARE BEST EDUCATED EXPRESS THE GREATEST INTEREST.

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Detailed Observation

A majority of the public is interested in scientific and technological matters, and those with more education are even more interested.

TABLE #33-1

Q: "How much interest do you actually have in scientific and technological matters -- are you very interested, somewhat interested, rather uninterested, or not interested at all?"

	Sept. 1983 %
Very interested	30
Somewhat interested	57
Rather uninterested	7
Not interested at all	5

Source: Harris for Southern New England Telephone, Sept. 1983, national, n = 1256.

TABLE #33-2

Q: "Are you very interested, moderately interested, or not at all interested in:

	Oct. 1979		
	Very	Moderately	Not At All
	%	%	%
"...New scientific discoveries."	36	49	15
"...The use of new inventions and technologies."	33	51	15
New scientific discoveries			
Less than high school	28	48	33
High school graduate	36	55	12
Some college/college graduate	48	48	4
New inventions/technologies			
Less than high school	22	47	33
High school graduate	33	55	12
Some college/college graduate	44	50	7

Source: Institute for Survey Research Temple University for the National Science Foundation, Oct. 1979, national, n = 1635.

****

FINDING #34

MOST AMERICANS FEEL THAT THEIR BASIC UNDERSTANDING OF SCIENCE AND TECHNOLOGY IS AT LEAST "ADEQUATE." HOWEVER, THE PUBLIC DOES NOT FEEL WELL INFORMED ABOUT SCIENTIFIC AND TECHNOLOGICAL ISSUES, AND FOUR OF FIVE SAY CITIZENS IN GENERAL ARE TOO POORLY INFORMED TO HELP SET GOALS FOR SCIENTIFIC RESEARCH.

****

Detailed Observation

Most people believe that their basic understanding of science and technology is "adequate;" only one is four says he has a "very good" understanding of these areas.

TABLE #34-1

Q: "If you had to rate your own basic understanding of science and technology, would you say it is very good, adequate, or poor?"

	Sept. 1983 %
Very good	24
Adequate	59
Poor	16
Not sure	1

Source: Harris for Southern New England Telephone, Sept. 1983, national, n = 1256.

Detailed Observation

While about half the public believe they are "moderately" informed about issues involving new technology and innovation, four in ten say they are "poorly" informed. Even among people with at least some college education, only 15 percent say they are "very" informed. In addition, more than four in five feel that most citizens are not well enough informed to help set goals for scientific research or to decide which new technologies should be developed.

TABLE #34-2

Q: "Would you consider yourself very will informed, moderately informed, or poorly informed about this area?"

"...Issues about the use of new inventions and technologies."

	Oct. 1979		
	Poorly Informed	Moderately Informed	Very Informed
	%	%	%
Total Sample:	39	50	10
Education Level:			
Less than high school	52	34	6
High school graduate	42	50	8
Some college/college graduate	25	60	14

"...Issues about new scientific discoveries."

	Oct. 1979		
	Poorly Informed	Moderately Informed	Very Informed
	%	%	%
Total Sample:	37	52	10
Education Level:			
Less than high school	56	37	5
High school graduate	37	54	9
Some college/college graduate	23	61	15

Source: Institute for Survey Research Temple University for the National Science Foundation, Oct. 1979, national, n = 1635.

TABLE #34-3

Q: "Generally speaking, would you say that most citizens are well enough informed or not well enough informed...?"

	Oct. 1979		
	Yes	No	Don't Know
	%	%	%
"...To help set goals for scientific research."	11	86	3
"...To decide which new technologies should be developed."	12	85	4

Source: Institute for Survey Research, Temple University for the National Science Foundation, Oct. 1979, national, n = 1635.

****

FINDING #35

THOSE WHO ARE MORE INTERESTED IN AND KNOWLEDGEABLE ABOUT SCIENCE AND TECHNOLOGY ARE MORE LIKELY TO BECOME INVOLVED IN SCIENTIFIC OR TECHNOLOGICAL CONTROVERSIES. MOST PEOPLE'S RELUCTANCE TO GET INVOLVED DOES NOT STEM FROM FEELINGS OF POWERLESSNESS; RATHER, MOST SAY THEY WOULD NOT GET INVOLVED BECAUSE THEY DO NOT KNOW ENOUGH ABOUT THE ISSUE.

****

Detailed Observation

Compared to the public as a whole, almost twice as many among those with greater interest in and knowledge of science and technology would become involved in a controversy about nuclear power plants and space exploration. However, both groups would be more likely to become involved in a nuclear power plant controversy (that is, a controversy that was more familiar).

TABLE #35-1

Q: "I would definitely taken an active part in controversies about..."

	Oct. 1979		
	Attentives*	Non-Attentives*	Total
	%	%	%
"...Nuclear power plants."	39	21	24
"...Space exploration."	12	6	7

* Note: Individuals were classified as attentive to science and technology if they scored high on measures of interest in science and knowledge and awareness of technology.

Source: National Opinion Research Center/Institute for Survey Research, Temple University for the National Science Foundation, Oct. 1979, national, (Attentives: n = 301); (Non-Attentives: n = 1334); (Total: n = 1635).

Detailed Observation

In controversies surrounding space exploration and nuclear power plants, majorities say their main reason for not getting involved is the feeling that they do not know enough about the issue. Feelings of powerless -- which often keep people from becoming involved in other issues -- are <u>not</u> the primary reason for their reluctance to get involved in controversies about science and technology.

TABLE #35-2

Reasons for not Wanting to Take an Active Part in Specific Issue Controversies.

(Exact question wording is not available.)

	(n = 1068) Space Exploration Controversy % *	(n = 627) Nuclear Plant Controversy % *
I don't know enough about the issue	69	59
It wouldn't do any good	30	32
I wouldn't know who to contact	22	15
I have too many other things to do	19	19
Someone else would probably express my views	15	19
It would not affect me personally	14	10

* Percents are based on those who said they would not participate, not on the entire sample (See parentheses for sample sizes of each controversy.) Multiple responses were accepted so that the percentages add to more than 100.

Source: National Opinion Research Center, University of Chicago/Institute for Survey Research Temple University for the National Science Foundation, Oct. 1979, national, n = 1635.